ISTEP+ Grade 7 Writing

Truck Rental

Practice Set 1
Student Response 1

A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation \[ 82.50 = 25 + 0.5x \]

Part B

On the lines provided, define what the variable in your equation represents.

The variable \( x \) represents how many miles the truck is driven.

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

\[
\begin{align*}
82.50 \\
- 25 \\
\underline{57.50} \\
\times 0.5 \\
\underline{28.75} \\
\frac{115}{8} \times 3.5 \\
\underline{50.325}
\end{align*}
\]

Answer \( $50.31 \)

**Content - 3 pts**
The response indicates a thorough understanding of the mathematical concepts by providing a correct equation in Part A and work to find the 115 miles in Part C.

**Process - 3 pts**
The response indicates a limited understanding of the mathematical processes related to the task. The variable is correctly defined in Part B, but an incorrect process to find the cost of the gas is shown in Part C.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A
Sue rented a truck from the company and was charged $82.50 when she returned the truck.
Write an equation that can be used to determine the number of miles Sue drove the truck.
Equation: \((82.50-25)/0.50 = m\)

Part B
On the lines provided, define what the variable in your equation represents.
\(m\) means miles

Part C
Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.
How much, in dollars, does Sue pay for the gas?

Show All Work
\[
(82.5-25)/0.50 = 115
115/8 = 14.375
14.375 \times 3.50 = 50.3125 \approx 50.31
\]

Answer: $50.31

The response indicates a thorough understanding of the mathematical concepts by providing a correct equation in Part A and work to find the 115 miles in Part C.

The response indicates a partial understanding of the mathematical processes related to the task. The variable is insufficiently defined in Part B, but the correct process of dividing by 8 and multiplying by 3.50 is shown with correct calculations and rounding in Part C.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation: \(0.50x + 25.00 = 82.50\)

Part B

On the lines provided, define what the variable in your equation represents.

\[\text{Let } x = \text{ the number of miles Sue drove the truck}\]

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

\[
\begin{align*}
0.50x + 25.00 &= 82.50 \\
0.50x &= 82.50 - 25 \\
0.50x &= 57.5 \\
\frac{0.50x}{0.50} &= \frac{57.5}{0.50} \\
x &= 115 \\
115 \div 8 &= 14.4 \\
&= 50.4
\end{align*}
\]

Answer: $50.4

Content - 3 pts: The response indicates a thorough understanding of the mathematical concepts by providing a correct equation in Part A and work to find the 115 miles in Part C.

Process - 2 pts: The response indicates a partial understanding of the mathematical processes related to the task. The variable is correctly defined in Part B, and the correct process of dividing by 8 and multiplying by 3.50 is shown in Part C; however, calculation errors are present when rounding is applied too early (14.375 to 14), and incorrectly (50.4 to 51).
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A
Sue rented a truck from the company and was charged $82.50 when she returned the truck.
Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation $25 + 0.50x = 82.50$

Part B
On the lines provided, define what the variable in your equation represents.
The variable $x$ represents the number of miles Sue drove.

Part C
Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

\[ \frac{25 + 0.50x = 82.50}{8 \times 3.50 = 28} \]

Answer $28.00$

The response indicates a thorough understanding of the mathematical concepts by providing a correct equation in Part A and work to find the 115 miles in Part C.

The response indicates a thorough understanding of the mathematical processes related to the task by correctly defining the variables in Part A and in Part C, providing the correct set-up to solve for the answer and giving the correct solution of 448.
Student Response 5

A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A
Sue rented a truck from the company and was charged $82.50 when she returned the truck.
Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation $82.50 = 0.50m + 25$

Part B
On the lines provided, define what the variable in your equation represents.

The variable represents 50 cents times miles driven.

Part C
Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.
How much, in dollars, does Sue pay for the gas?

Show All Work

\[
\begin{align*}
82.50 &= 0.50m + 25 \\
2.50 &= 0.50m \\
55 &= 1m \\
55 &= 3.5m \\
115 &= m
\end{align*}
\]

Answer $115$

Content - 3 pts
The response indicates a thorough understanding of the mathematical concepts by providing a correct equation in Part A and work to find the 115 miles in Part C.

Process - 0 pts
The response indicates no understanding of the mathematical processes related to the task. The variable is incorrectly defined in Part B by including the constant, and the process of finding the total cost of gas was partially executed by dividing by 8 but not multiplying by 3.50.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation \( \frac{1}{2}x + (50 - 25) \)

Part B

On the lines provided, define what the variable in your equation represents.

\( x = \text{miles driven} \)

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

Answer $7.50 per gallon.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation: \( \frac{82.50}{100} = \frac{m}{25.00} \)

Part B

On the lines provided, define what the variable in your equation represents.

\( m \) = miles driven

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work:

\[
\begin{align*}
780 \div 50 & = 15.60 \\
-26.00 & \quad \text{(Round to 1 decimal place)} \\
\hline
57.50 & \quad \text{(115 miles)}
\end{align*}
\]

\[
\begin{align*}
14.4 \times 3.50 & = 49.40 \\
72.00 & = \frac{49.40}{1.52} \\
11.52 & \quad \text{(Round to 2 decimal places)}
\end{align*}
\]

Answer: $11.52

The response indicates a limited understanding of the mathematical concepts by providing an invalid equation in Part A, but shows work to find the 115 miles in Part C.

The response indicates a limited understanding of the mathematical processes related to the task. The variable is incorrectly defined due to it being part of a proportion rather than an equation in Part A. Further, a percent sign is used in the proportion which acts as another variable. Credit can only be awarded for the definition of a variable if the variable comes from an expression or an equation. In Part C, the correct process is shown by dividing by 8 and multiplying by 3.50, but a calculation error is made when rounding is applied too early during the division process (14.375 to 14.4). The multiplication process also contains a calculation error due to the misalignment of numbers.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation $82.50 + 0.50 = 165 \text{ miles}$

Part B

On the lines provided, define what the variable in your equation represents.

The variable represents how many miles Sue has driven.

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

$165 \text{ miles} \div 8 \text{ miles/gallon} = 20 \text{ gallons}$

$3.50 \times 20 = \$72$

Answer $\$72$.  

The response indicates no understanding of the mathematical concepts by providing an invalid equation in Part A and does not find the 115 miles in Part C.

The response indicates a limited understanding of the mathematical processes related to the task. There is no variable to define in Part B as no variable is written in the equation. The correct process of dividing 165 by 8 and multiplying by 3.50 is shown in Part C; however, there is a calculation error when 165 is divided by 8 to find 20 instead of 20.625.
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

Part A

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

Equation: $\frac{82.50 - 25.00}{0.50} = 32.5$ miles

Part B

On the lines provided, define what the variable in your equation represents.

What sue was charged.

Part C

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

Show All Work

$32.5 \div 8 \times 3.50 =$

Answer: $14.21$

Content - 0 pts

The response indicates no understanding of the mathematical concepts by providing an invalid equation in Part A and not finding the 115 miles in Part C.

Process - 1 pt

The response indicates a limited understanding of the mathematical processes related to the task. There is no variable to define in Part B as no variable is written in the equation. In Part C, the correct process of dividing by 8 and multiplying by 3.50 is shown using the incorrect number of miles found in Part A, but a calculation error is made, resulting in an incorrect answer of $14.21.$
A truck rental company charges a flat fee of $25.00 to rent a truck and an additional $0.50 for each mile the truck is driven. There is no sales tax.

**Part A**

Sue rented a truck from the company and was charged $82.50 when she returned the truck.

Write an equation that can be used to determine the number of miles Sue drove the truck.

**Equation**

**Part B**

On the lines provided, define what the variable in your equation represents.

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**Part C**

Sue pays for the gas used by the truck. The truck travels 8 miles per gallon of gas. Sue pays $3.50 per gallon of gas, including sales tax.

How much, in dollars, does Sue pay for the gas?

**Show All Work** $8 \times 2.50 = 20$

**Answer** $20$

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**Content - 0 pts**

The response indicates no understanding of the mathematical concepts by providing no equation in Part A and no total number of miles (115) driven in Part C.

**Process - 0 pts**

The response indicates no understanding of the mathematical processes related to the task. No variable is defined in Part B, and an incorrect process is shown in Part C by multiplying 8 with 3.50.